

**The DL-T645-2007 plugin
PRINTED MANUAL**

DL-T645-2007 plugin

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1 Introduction

The DL-T645-2007 protocol is used in many Chinese multifunction energy meters to unify data exchange between a host computer and meters (for example, it can be a single-phase energy meter or multi-rate watt-hour meter). The plugin implements some parts of the DL-T645-2007 protocol to read current values.

This protocol adopts a half-duplex communication mode with a master-slave structure. A computer or server is a master station that polls multiple watt-hours meters which act as a slave station.

This module has the following features:

- It can read current data from any DL-T645-2007-compatible device.
- The plugin can work with serial and network interfaces.
- It can poll meter data by a custom interval.
- It can poll data from multiple devices at the same time.

2 System requirements

The following requirements must be met for "DL-T645-2007" to be installed:

Operating system: Windows 2000 SP4 and above, including both x86 and x64 workstations and servers. The latest service pack for the corresponding OS is required.

Free disk space: Not less than 5 MB of free disk space is recommended.

Special access requirements: You should log on as a user with Administrator rights in order to install this module.

The main application (core) must be installed, for example, Advanced Serial Data Logger.

3 Installing DL-T645-2007

1. Close the main application (for example, Advanced Serial Data Logger) if it is running;
2. Copy the program to your hard drive;
3. Run the module installation file with a double click on the file name in Windows Explorer;
4. Follow the instructions of the installation software. Usually, it is enough just to click the "Next" button several times;
5. Start the main application. The name of the module will appear on the "Modules" tab of the "Settings" window if it is successfully installed.

If the module is compatible with the program, its name and version will be displayed in the module list. You can see examples of installed modules on fig.1-2. Some types of modules require additional configuration. To do it, just select a module from the list and click the "Setup" button next to the list. The configuration of the module is described below.

You can see some types of modules on the "Log file" tab. To configure such a module, you should select it from the "File type" list and click the "Advanced" button.

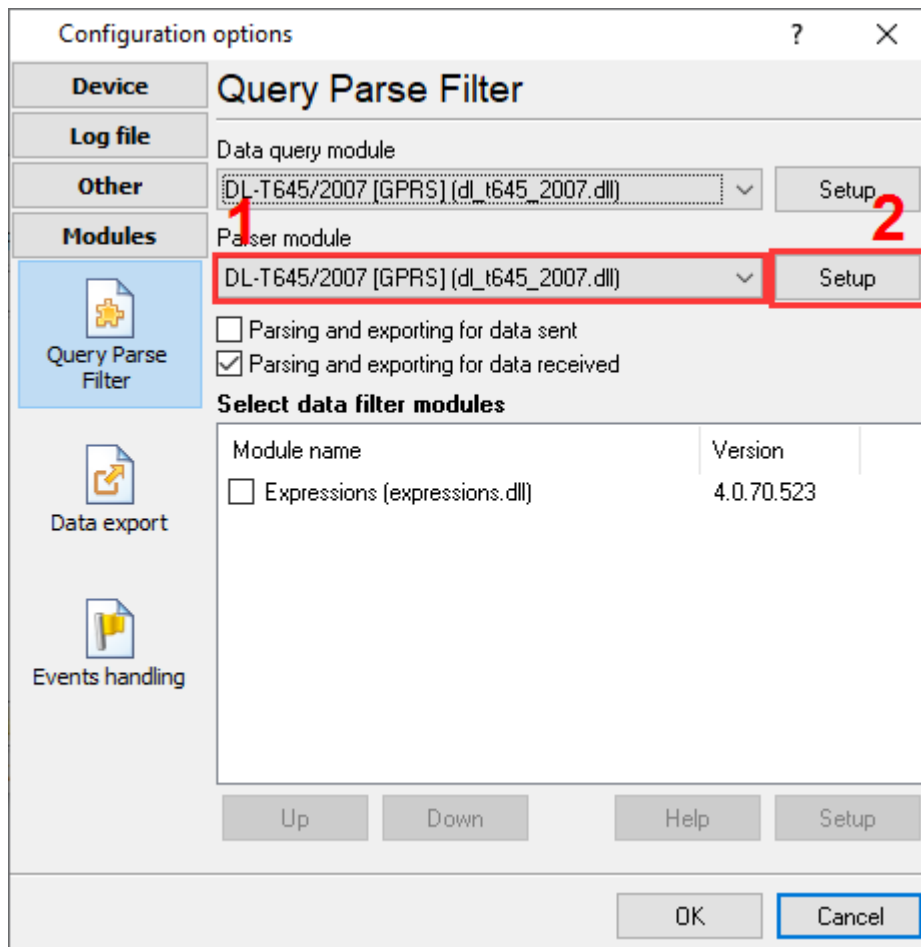


Fig. 1. Example of installed module

4 Glossary

Main program - it is the main executable of the application, for example, Advanced Serial Data Logger and asdlog.exe. It allows you to create several configurations with different settings and use different plugins.

Plugin - it is the additional plugin module for the main program. The plugin module extends the functionality of the main program.

Parser - it is the plugin module that processes the data flow, singling out data packets from it, and then variables from data packets. These variables are used in data export modules after that.

Core - see "Main program."

5 Requests queue

To add a new item, click "Actions - Add new request." The dialog window will be shown (fig.1). Enter a request description that can contain any characters and click the "OK" button.

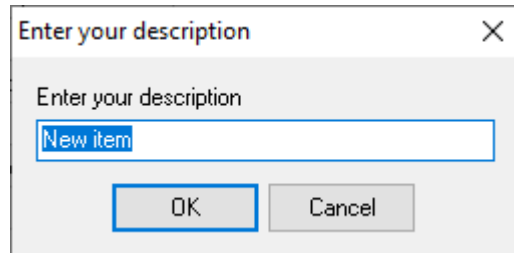


Fig.1. Name dialog

The new data request will appear in the requests tree (fig.2). Each request has few important options:

Device address - it is a communication address of a watt-hour or electricity meter used in point-to-point communication. The address field comprises 6 bytes, each of which contains two BCD-coded digits. Therefore, the address can be 12 digits long. You should specify the device address as a decimal number. You can specify several device addresses separated by a semicolon for similar meters on one bus.

Function - it is a request type to read the data from a watt-hour meter. Each function may return one or more values at once.

Rate - some devices can measure selected values (e.g. energy) using several rates. If the rate is zero the device returns a total value for all rates. Otherwise, you can retrieve a value for a specific rate number.

Request timeout - After reaching the timeout limit, the program will automatically cancel the current request and execute the next request in the queue. The timeout value depends on the media speed on device performance, and if the data transfer rate over media is slow, then the timeout value should be larger.

DL-T645/2007 [GPRS] 4.0.54.602

Requests queue

Property	Value
Request 1	
<input checked="" type="checkbox"/> Send requests, otherwise parse response only	
Device address	1
Request timeout (ms)	1000
Request method	
<input type="radio"/> Once, on the program startup	
<input checked="" type="radio"/> Polling	
Interval (ms)	30
Interval units	Second
<input type="radio"/> At specified time	
<input type="radio"/> Time using Unix Cron schedule	
Response items	
Value1	
Function	Voltage (all phases)
Rate	0
Value2	
Function	Current (all phases)
Rate	0
Request 2	

Action ▼

OK Cancel

Fig.2. DL-T645-2007 request

6 Request method

The plugin can send requests in the following mode:

Once, on program startup - the program will send a request once when the program starts.

Polling - the program will send a request periodically based on an interval specified. The interval between requests depends on the network on which master (program) and slave (device) is running. If the network is slow, then the time for each request will be larger and vice versa. Because the program executes all requests in the queue one by one, the time between requests depends on the number of requests in the queue.

At the specified time - the time of the day using the 24hr format (e.g., 18:00:00). You may specify several time points separated by a semicolon (e.g. 11:00:00;11:20:00;11:40:00).

Time, using Unix Cron schedule - a flexible schedule format that allows sending requests periodically or at the specified time. You can find detailed information about this format and see examples in the "Cron time format" section. The default is 0 0 12 * * *, which means "every week, every day at 12:00:00".

Event - the program executes the corresponding request when the plugin receives an external event. These events can be generated by our other plugins, like "Event generator," "Script execute," "Expressions,"

Request method

Once, on the program startup

Polling

Interval (ms)	10000
Interval units	Millisecond

At specified time

Time using Unix Cron schedule

Event

Fig. 2. Request methods

If you have added several requests to the queue, you can move them up or down. To do it, select a request, click the "Action" button, and select an action ("Move up" or "Move down").

You can also click this button to change a request's description or remove a request from the queue.

You can also perform the same actions by using the context menu that pops up when you right-click items in the request tree.

7 Cron time format

The CRON format is a simple yet powerful way to describe time and operation periodicity. The traditional (inherited from the Unix world) CRON format consists of five fields separated with spaces:

<Second> <Minutes> <Hours> <Month days> <Months> <Weekdays>

Any of the five fields can contain the * (asterisk) character as its value. It stands for the entire range of possible values. For example, every minute, every hour and so on. In the first four fields, you can also use the proprietary "?" (w/o quotes) character. See its description below.

Any field can contain a list of comma-separated values (for example, 1,3,7) or an interval (subrange) of values defined by a hyphen (for example, 1-5).

You can use the / character after the asterisk (*) or after an interval to specify the value increment. For example, you can use 0-23/2 in the "Hours" field to specify that the operation should be carried out every two hours (old version analog: 0,2,4,6,8,10,12,14,16,18,20,22). The value */4 in the

"Minutes" field means that the operations must be carried out every four minutes. 1-30/3 is the same as 1,4,7,10,13,16,19,22,25,28.

You can use three-word abbreviations in the "Months" (Jan, Feb, ..., Dec) and "Weekdays" (Mon, Tue, ..., Sun) fields instead of numbers.

Examples

Note: the <Second> field equal 0 in all examples

Format	Description
* * * * *	every minute
59 23 31 12 5	one minute before the end of the year if the last day in the year is Friday
59 23 31 Dec Fri	one minute before the end of the year if the last day in the year is Friday (one more variant)
45 17 7 6 *	every year on the 7th of June at 17:45
0,15,30,45 0,6,12,18 1,15,31 * 1-5 *	00:00, 00:15, 00:30, 00:45, 06:00, 06:15, 06:30, 06:45, 12:00, 12:15, 12:30, 12:45, 18:00, 18:15, 18:30, 18:45, if it is the 1st, 15th or 31st of any month and only on workdays
*/15 */6 1,15,31 * 1-5	00:00, 00:15, 00:30, 00:45, 06:00, 06:15, 06:30, 06:45, 12:00, 12:15, 12:30, 12:45, 18:00, 18:15, 18:30, 18:45, if it is the 1st, 15th or 31st of any month and only on workdays (one more variant)
0 12 * * 1-5 (0 12 * * Mon-Fri)	at noon on workdays
* * * 1,3,5,7,9,11 *	every minute in January, March, May, July, September, and November
1,2,3,5,20-25,30-35,59 23 31 12 *	on the last day of the year at 23:01, 23:02, 23:03, 23:05, 23:20, 23:21, 23:22, 23:23, 23:24, 23:25, 23:30, 23:31, 23:32, 23:33, 23:34, 23:35, 23:59
0 9 1-7 * 1	on the first Monday of every month at 9 in the morning
0 0 1 * *	at midnight on the 1st of every month
* 0-11 * *	every minute till noon
* * * 1,2,3 *	every minute in January, February, and March
* * * Jan, Feb, Mar *	every minute in January, February, and March
0 0 * * *	every day at midnight
0 0 * * 3	every Wednesday at midnight

You can use the proprietary "?" character in the first four fields of the CRON format. It stands for the start time, i.e., the question mark will be replaced with the start time during the field processing: minute for the minute field, hour for the "Hours" field, month day for the month day field, and month for the month field.

For example, if you specify:

? ? * * *

The task will be run at the moment of startup and will continue being run simultaneously (if the user does not restart the program again, of course) – the question marks are replaced with the time the program was started at. For example, if you start the program at 8:25, the questions marks will be replaced like this:

25 8 * * * *

Here are some more examples:

- ? ? ? ? * - run only at startup;
- ? * * * * - run at startup (for example, at 10:15) and continue being run in exactly one hour: at 11:15, 12:15, 13:15 and so on;
- * ? * * * - run every minute during the startup hour;
- */5 ? * * * - run on the next day (if CRON is not restarted) at the same hour every minute and so on every day, once in five minutes, during the startup hour.